

Declassification Review by NGA

OUT63006

TOP SECRET 020136Z CITE [REDACTED] 1663. 02 12Z  
PRIORITY [REDACTED]SUBJ: MISSION 1043 PHOTOGRAPHIC EVALUATION INTERIM REPORT (PEIR).  
REF: A. [REDACTED]  
B. [REDACTED]1. NUMERICAL SUMMARY  
MSN NO AND DATESLAUNCH DATE AND TIME:  
VEHICLE NUMBER:  
CAMERA SYSTEM:  
PAN CAMERA NO:MSN 1043-1 S/I NO:  
MSN 1043-2 S/I NO:  
RECOVERY REVS:1043-1, 7-14 AUGUST 1967  
1043-2, 14-22 AUGUST 1967  
7 AUGUST 1967/2143Z  
1637  
J-42  
FORWARD-LOOKING, 200  
AFT-LOOKING, 201  
D107/135/135  
D112/139/143  
MSN 1043-1, 113  
MSN 1043-2, 2402. CAMERA SETTINGS  
FWD-LOOKING  
AFT-LOOKING0.200 INCH SLIT, WRATTEN 23A  
0.150 INCH SLIT, WRATTEN 21

## 3. PERFORMANCE SUMMARY

THE IMAGE QUALITY OF MISSION 1043 UP TO THE OCCURRENCE OF SYSTEM MALFUNCTIONS WAS GOOD AND COMPARABLE TO RECENT CORONA MISSIONS. THE AFT CAMERA PERFORMED SATISFACTORILY THROUGHOUT THE MISSION AND THE IMAGE QUALITY OF THE AFT MATERIAL WAS GOOD AND CONSISTENT THROUGHOUT. THE FWD CAMERA SUFFERED A LOSS IN IMAGE QUALITY DUE TO AN ERRATIC SCAN RATE WHICH FINALLY CAUSED COMPLETE FILM PULL-OUT OF THE RAILS. THE PHOTO-INTERPRETABILITY OF MISSION 1043 RANGES FROM GOOD TO POOR. THE QUALITY OF MOST IMAGERY GENERATED DURING THE FIRST HALF OF THE MISSION (MISSION 1043-1) IS CONSIDERED TO BE GOOD WHEN ATMOSPHERIC CONDITIONS ARE FAVORABLE. THERE WAS, HOWEVER, A PREVALENCE OF ADVERSE ATMOSPHERIC CONDITIONS. ADDITIONAL DEGRADATION ATTRIBUTED TO BLOWING SAND IS APPARENT IN CERTAIN HEAVILY TARGETED AREAS OF 1043-1. THE PI SUITABILITY OF MISSION 1043-2 IS POORER THAN THAT OF MISSION 1043-1. THE ERRATIC SCAN RATE AND EVENTUAL FAILURE CAUSED A VARYING DEGREE OF IMAGE DEGRADATION TO THE MASTER CAMERA RECORD. NO STEREOSCOPIC ANALYSIS WAS POSSIBLE AFTER PASS 228D FRAME 119. THE EFFECT OF THE DEGRADATION OF THE MASTER CAMERA IMAGERY WAS SOMEWHAT ALLEVIATED UP TO PASS 228D BY THE AVAILABILITY OF GOOD SLAVE CAMERA IMAGERY ALLOWING STEREOSCOPIC COVERAGE.

## 4. ANOMALIES

A. THE NORMAL SCAN RATE CHARACTERISTICS OF THE FWD-LOOKING CAMERA CHANGED DURING OPERATION ON 68D TO AN ABNORMAL RETARDATION OF SCAN DURING THE LAST THIRD OF ALL SUCCEEDING FRAMES.

B. ALL MATERIAL RETURNED FROM THE FWD-LOOKING CAMERA AFTER FRAME 119 OF PASS 228D IS SEVERELY DEGRADED; MATERIAL FROM THE LAST 13 OPERATIONS WAS NOT RETURNED.

CAUSE: THESE ANOMALIES ARE BELIEVED RELATED: THE SLOWING OF SCAN DURING PART OF EACH CYCLE WAS CAUSED BY A MECHANICAL BINDING WHICH PROGRESSIVELY WORSENERED, RESULTING EVENTUALLY IN PULLING THE FILM OUT OF THE RAILS. THE RETARDATION EFFECT BECAME READILY OBSERVABLE DURING TEN FRAMES OF PASS 68D; ANALYSIS INDICATED THAT SCAN RATE CHARACTERISTICS WERE PREVIOUSLY NORMAL. THE CONDITION GRADUALLY PROGRESSED UNTIL ON REV 159, ERRORS OF 45 PERCENT EXISTED ON THE SUPPLY SIDE OF THE FORMATS. THESE ERRORS CAUSED A NOTICEABLE LOSS OF IMAGE QUALITY AND WERE RESPONSIBLE FOR THE CYCLE RATE/CYCLE COUNT DISCREPANCIES NOTED ON TM. THESE DISCREPANCIES WERE NOT FLAGGED AT THE TIME AS A CAMERA PROBLEM, SINCE THE SYSTEM RESPONDED AFTER THE END OF SCAN

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WITH A SPEED-UP, WHICH NEARLY COMPENSATED FOR THE APPARENT 20 DEGREES OF BINDING. THE EFFECT OF SUCH A SPEED-UP AT SCAN END IS TO INTRODUCE FILM TENSION TRANSIENTS INTO THE TRANSPORT SYSTEM. SLACK LOOPS CAUSED BY THE TRANSIENTS WERE ABSORBED DURING THE FIRST MISSION BY THE NATURE OF THE FILM PATH, AND DURING MOST OF THE SECOND MISSION BY THE RELATIVELY LOW INERTIA OF THE TAKE-UP CASSETTE. THE TENSION TRANSIENTS CAUSE FILM TO SLIP PAST THE FRAME METERING ROLLER, THE SLIPPAGE INCREASING AS THE MISSION PROGRESSES. ULTIMATELY, AN IRRECOVERABLE SLACK LOOP CONDITION OCCURRED, WHICH ON REV 228 FRAME 120 RESULTED IN THE FILM BEING PULLED FROM THE RAILS. PROCEEDING FRAMES ON 228D SHOWED DECIDED BANDING, EVIDENCE OF CONTINUING SCAN RATE DIFFICULTIES. FOLLOWING RAIL PULL-OUT, THE IMAGERY WAS SEVERELY DEGRADED AND THE FORMAT LENGTH WAS AFFECTED BY THE FILM CHORD CREATED BETWEEN HORIZON CAMERA CLAMPS. PORT HORIZON PHOTOGRAPHY WAS SMEARED SINCE THE FILM WAS PULLED THROUGH THE SUPPLY H.O. AS THE SCAN HEAD MOVED THROUGH THE SCAN PHASE. EXTENT OF FILM MOTION WAS COMPARABLE TO THAT OBSERVED ON MISSION 1021, THE LAST CORONA OUT OF RAIL CONDITION. THE EXACT CAUSE OF THE BINDING COULD NOT BE DETERMINED FROM EXAMINATION OF THE FILM. THE BINDING COULD HAVE OCCURRED EITHER IN THE SCAN HEAD OR IN THE CAMERA GEAR AND PULLY MECHANISMS.

ACTION: AS INDICATED ABOVE, [ ] WAS NOT ABLE TO COME TO A DEFINITE CONCLUSION AS TO THE CAUSE OF THIS MALFUNCTION. ADDITIONAL ANALYSIS WILL BE CONDUCTED AT [ ] TO ATTEMPT TO ISOLATE THE CAUSE. CAMERA CLEANLINESS AND OPERATION INCLUDING SCAN RATES WILL CONTINUE TO BE RIGOROUSLY CHECKED PRIOR TO FLIGHT. (MONITORS: [ ])

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B. A PLUS DENSITY STREAK WAS PRESENT THROUGHOUT THE MISSION ON THE INBOARD EDGE OF THE FORWARD CAMERA FORMAT.

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CAUSE: THIS STREAK WAS APPARENTLY CAUSED BY AN IN-FLIGHT DISTORTION IN THE FILTER. THE FILTER EDGE WAS ACTING AS A CYLINDRICAL LENS CAUSING OVEREXPOSURE AND SEVERELY DEGRADED IMAGERY ON APPROXIMATELY 0.025 INCH OF THE FORMAT EDGE. THE CONDITION WAS ACCOMPANIED BY MINOR UNRELATED SCAN HEAD SCRATCHES IN THE TEN PERCENT OVERLAP AREA.

ACTION: INSURE THAT FILTERS ARE PROPERLY SEATED AND FASTENED DURING INSTALLATION. (MONITOR: [ ])

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C. CANTED TIME WORD, THE BINARY TIME WORD APPEARS TO BE CANTED RELATIVE TO THE CAMERA NUMBER INDEX. THE BINARY PORTION OF THE DATA BLOCK IS PARALLEL TO THE MATERIAL EDGE. BUT THE CAMERA SERIAL NUMBER AND THE SERIAL INDEX ARE DISPLACED CLOSER TO THE ACTIVE FORMAT BY APPROXIMATELY 0.015 INCH.

CAUSE: THE INSTRUMENT SERIAL NUMBER AND SERIAL INDEX BIT, ARE PRODUCED BY A COMMON MASK ATTACHED TO THE DATA BLOCK ASSEMBLY AND TRANSILLUMINATED BY A SINGLE LIGHT SOURCE. APPARENTLY, THIS MASK WAS POSITIONED INCORRECTLY DURING MANUFACTURING.

ACTION: THE RELATIONSHIP BETWEEN THE INSTRUMENT SERIAL NUMBER/SERIAL INDEX MASK AND THE BINARY DATA BLOCK WILL BE CHECKED AND CORRECTED IF REQUIRED DURING READINESS TESTING AT [ ]

(MONITOR: [ ])

D. COMMENTS WERE MADE IN THE REAGIN 31 MESSAGE RELATIVE TO PG PERFORMANCE. J-42 CAMERA HAD PG CAPABILITY; HOWEVER, MISSION 1043 WAS NOT PROGRAMMED AS A PG MISSION. CONSEQUENTLY NODAL TRACES WERE PROGRAMMED TO BE OPERATIVE ON A FEW SELECTED DOMESTIC PASSES AND WERE RECORDED AS PREVIOUSLY NOTED. AT THE BEGINNING OF 1043-1, RAIL HOLE IMAGERY WAS CONSISTENT WITH PRE-FLIGHT TEST RESULTS AND WAS ACCEPTABLE.

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DURING THE LATTER PART OF 1043-1 AND IN 1043-2, EMULSION FILLED RAIL HOLES AND CAUSED APPROXIMATELY 75 PERCENT LOSS OF RAIL HOLE IMAGERY.

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EFFECTIVE WITH CR-2 THE RAIL HOLES WILL BE FILLED WITH TRANSLUCENT MATERIAL WHICH SHOULD ALLEVIATE THE HOLE FILLING PROBLEM.  
E. A SMALL MINUS DENSITY SPOT WHICH APPEARS TO BE A FOREIGN PARTICLE ON THE RESEAU PLATE IS IMAGED ON THE 1043-2 STELLAR CAMERA. IT REMAINS IN THE SAME LOCATION ON EVERY FRAME TO THE END OF THE MISSION.

CAUSE: NO STELLAR ORIGINAL NEGATIVE OR DUPE POSITIVE FOR 1043-2 WAS AVAILABLE FOR THE [ ] EVALUATION.

ACTION: ALL PAYLOAD CONTRACTORS ARE REQUESTED TO STRESS OBSERVATION OF GOOD CLEANLINESS STANDARDS.

F. MINUS DENSITY STREAKS ON BOTH 1043-1 AND 1043-2 UP TO 0.25 OF AN INCH WIDE ARE PRESENT INTERMITTENTLY THROUGHOUT THE MISSION. THEY APPEAR TO FOLLOW THE PATH OF THE FIELD FLATTENER.

CAUSE: A FOREIGN PARTICLE WAS APPARENTLY TRAPPED IN THE LENS STOVE BETWEEN THE NUMBER FIVE ELEMENT AND THE FIELD FLATTENER. THIS PARTICLE BECAME ATTACHED TO THE UNDERSIDE OF THE FIELD FLATTENER AND MOVED WITH IT DURING PHOTOGRAPHIC SCAN.

ACTION: ALL PAYLOAD CONTRACTORS ARE REQUESTED TO STRESS OBSERVATION OF GOOD CLEANLINESS STANDARDS.

T O P S E C R E T

END OF MESSAGE

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